

Fig. 1

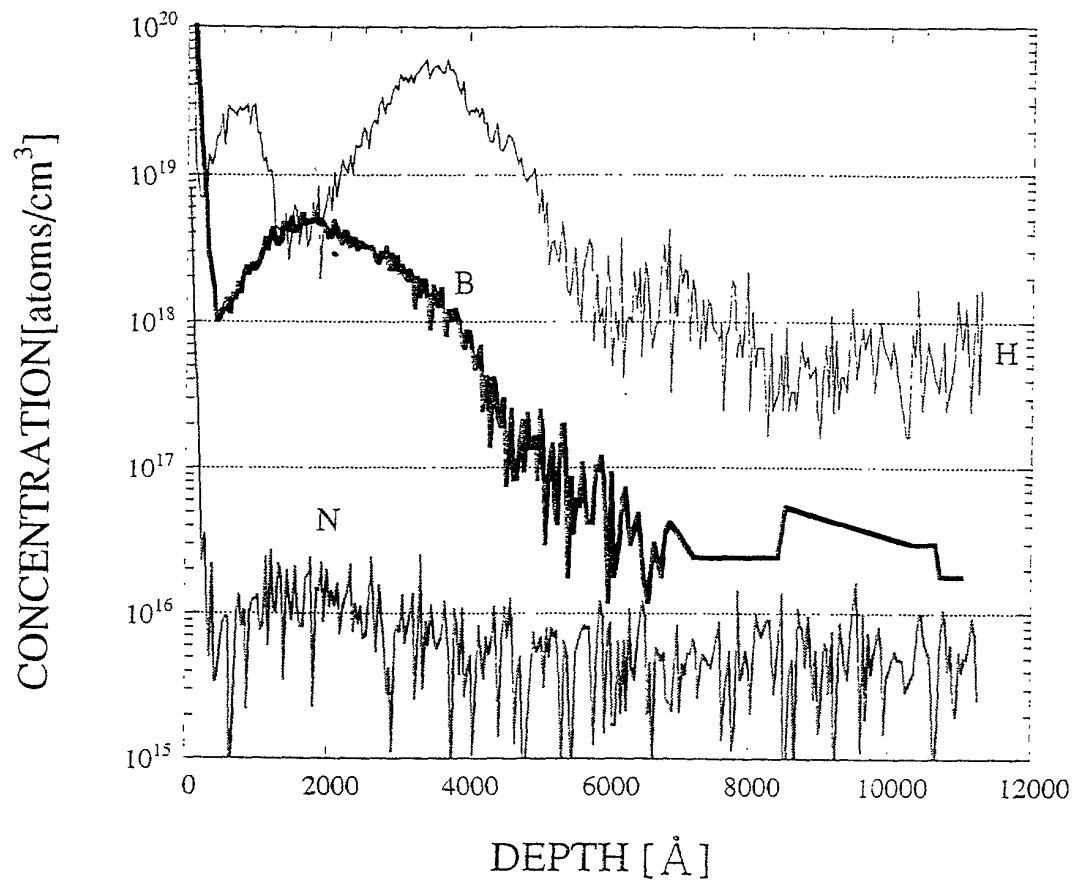


Fig. 2

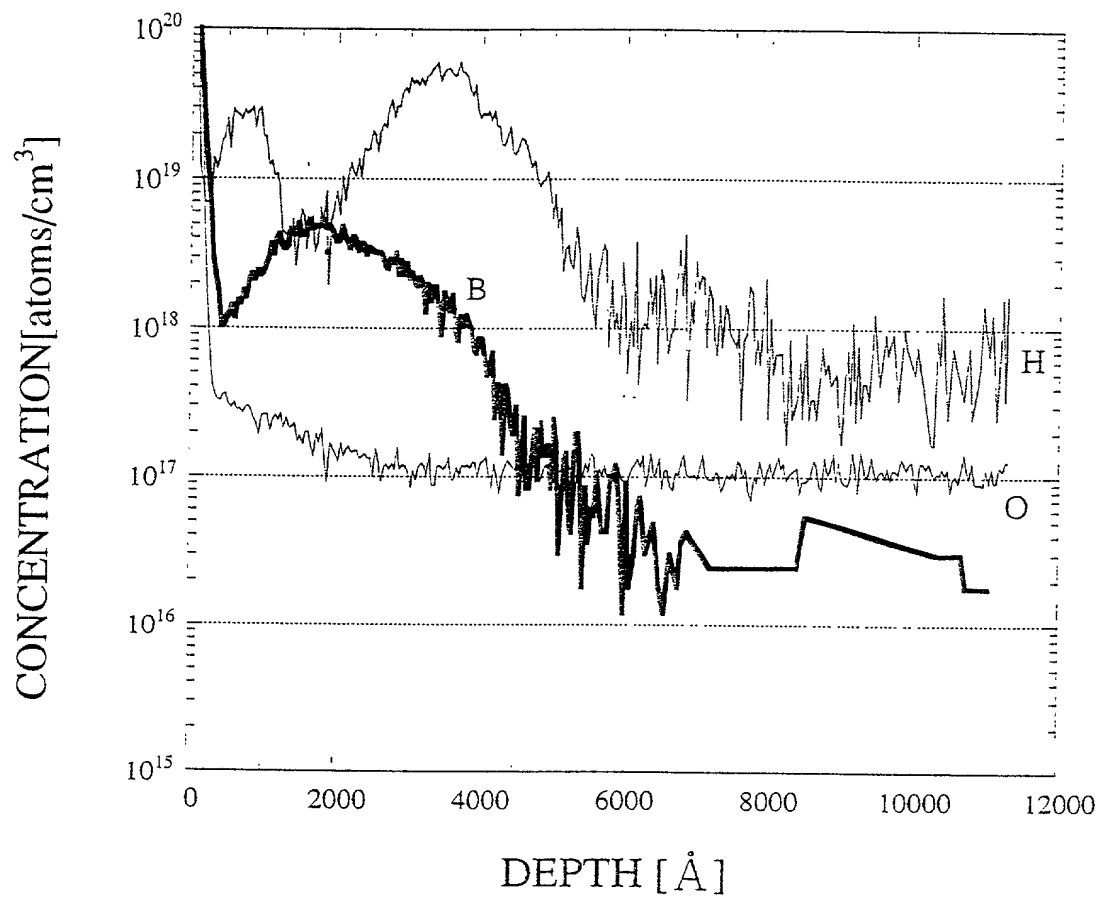


Fig. 3

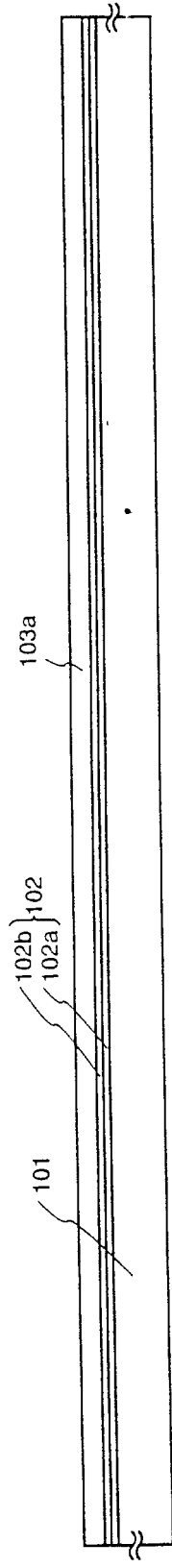


Fig. 4A

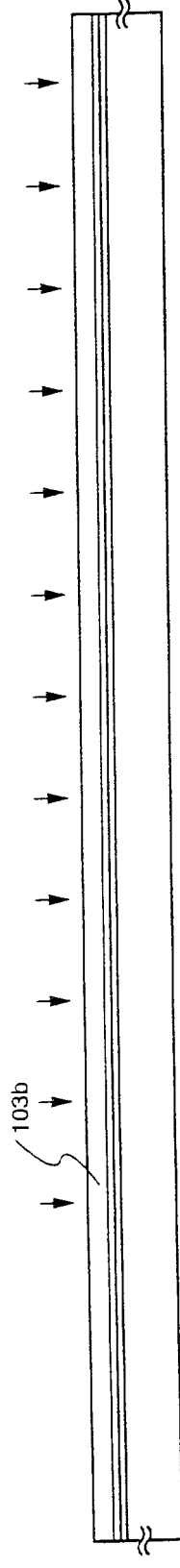


Fig. 4B

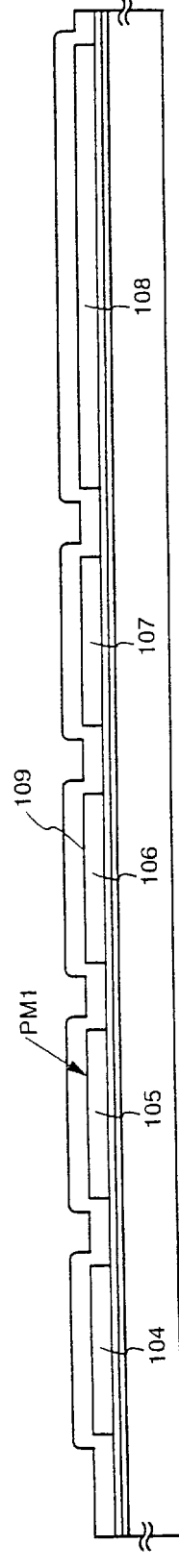


Fig. 4C

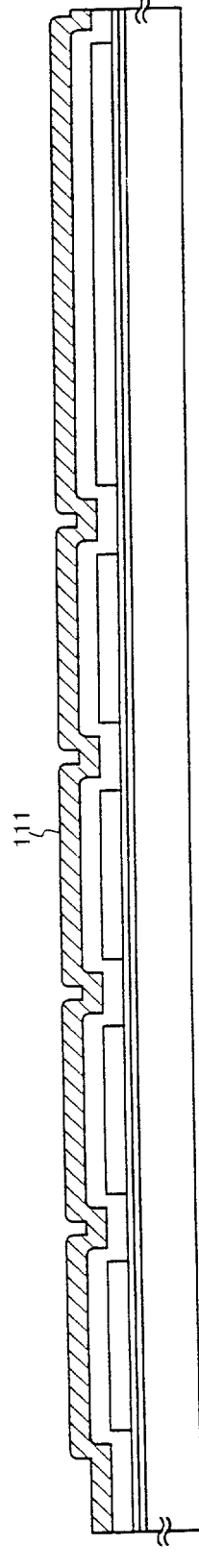
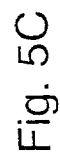
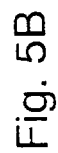
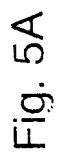


Fig. 4D



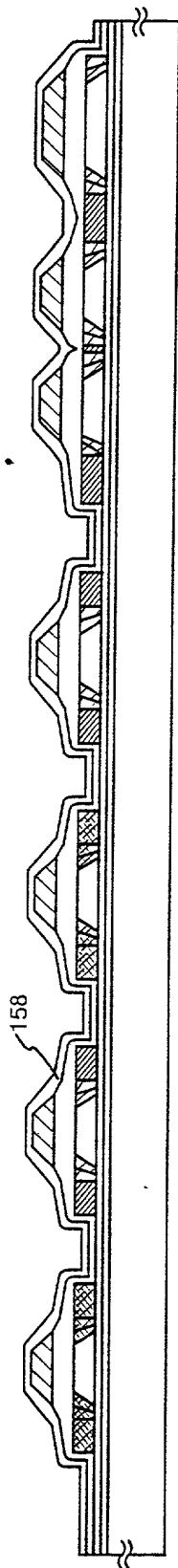


Fig. 6A

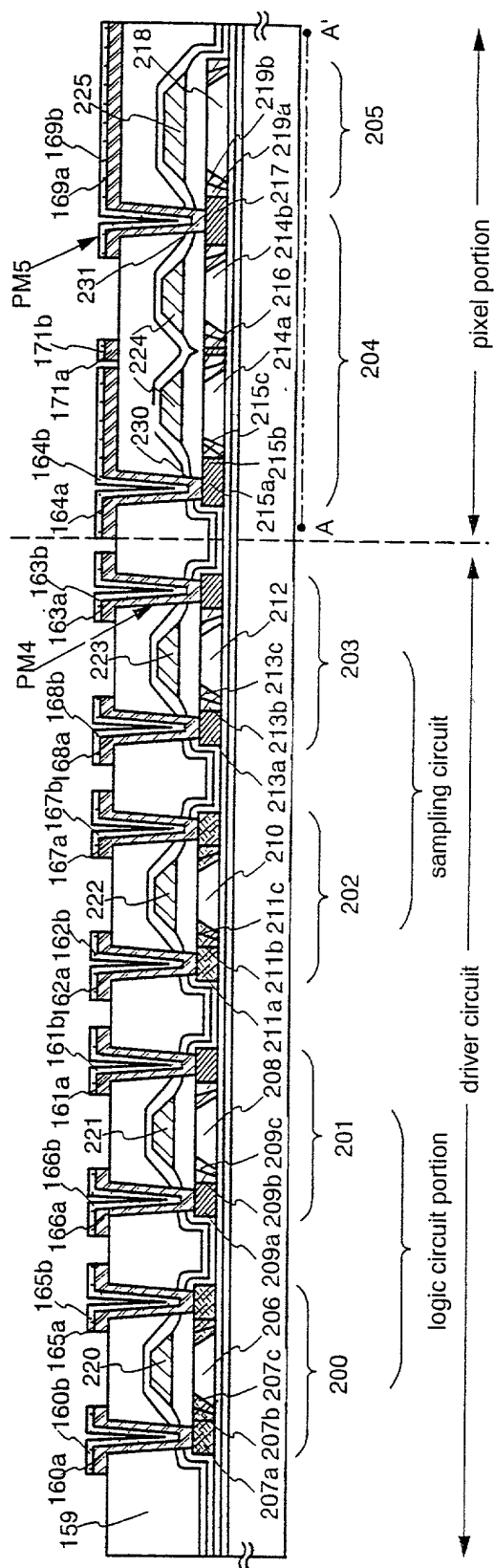


Fig. 6B

FIG. 7A is a cross-sectional view of a pixel portion of a semiconductor device. The pixel portion includes a substrate 170, a gate insulating layer 171, a gate electrode 172a, a gate electrode 172b, a gate electrode 172c, a gate electrode 172d, a gate electrode 172e, and a gate electrode 172f. The gate electrodes 172a and 172b are connected to a first gate line 173, and the gate electrodes 172c and 172d are connected to a second gate line 174. The gate electrodes 172e and 172f are connected to a third gate line 175. The pixel portion also includes a first pixel electrode 176 and a second pixel electrode 177. The first pixel electrode 176 is connected to the first gate line 173, and the second pixel electrode 177 is connected to the second gate line 174. The pixel portion is disposed on the substrate 170.

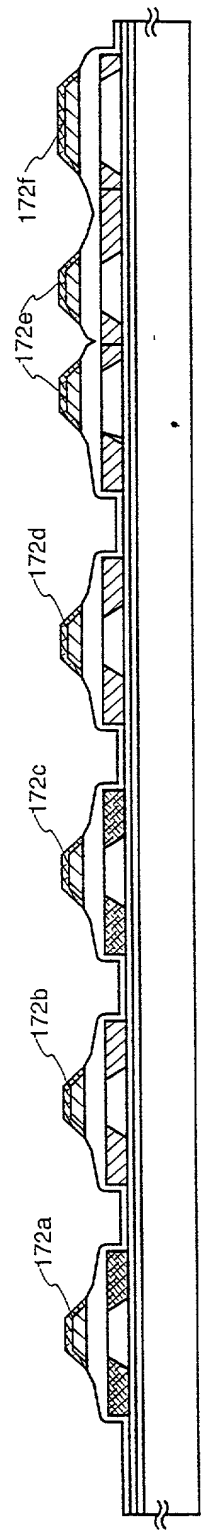


Fig. 7A

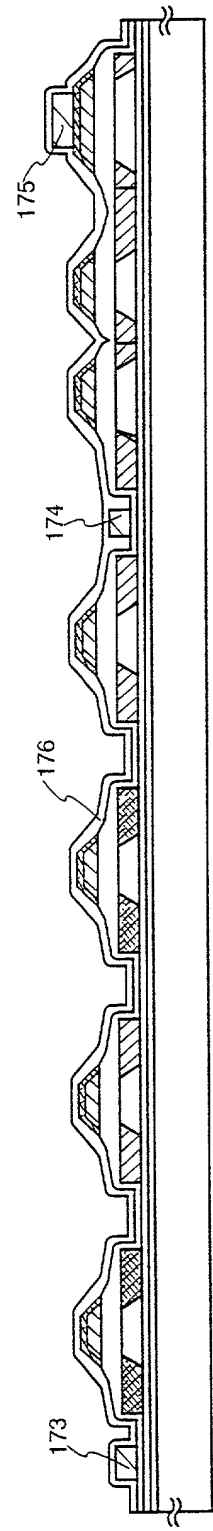


Fig. 7B

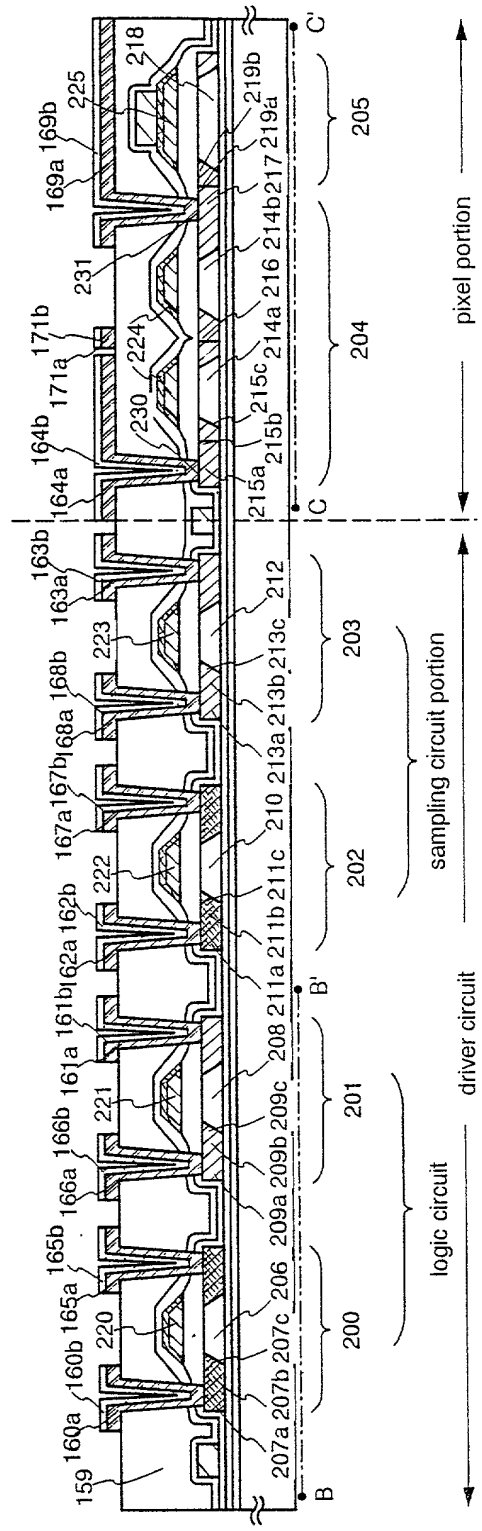


Fig. 7C

Fig. 8A

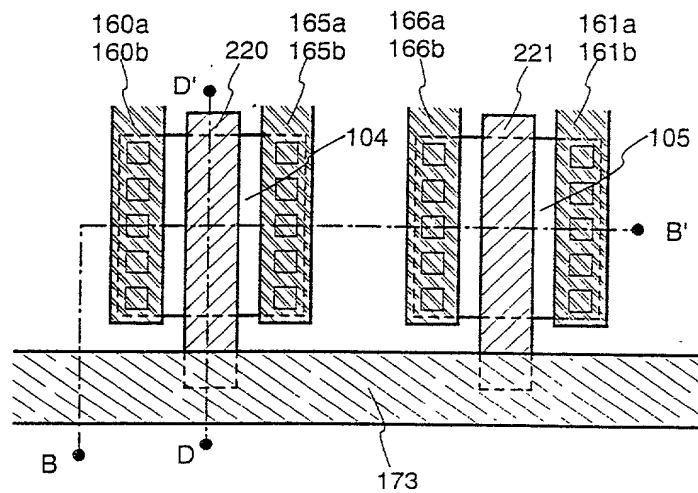


Fig. 8B

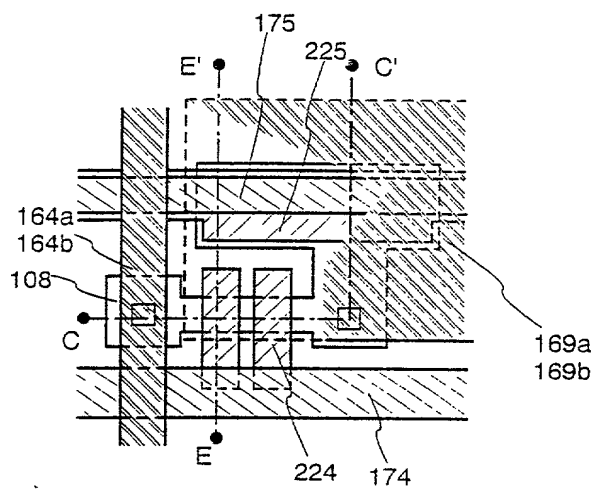


Fig. 9A

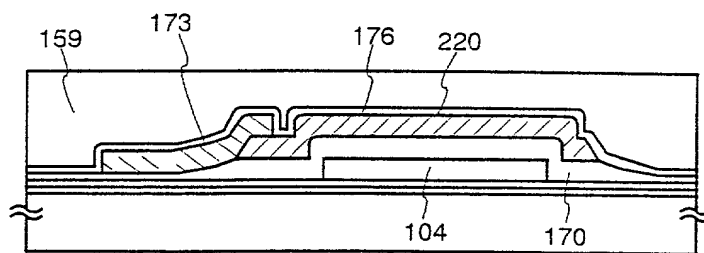


Fig. 9B

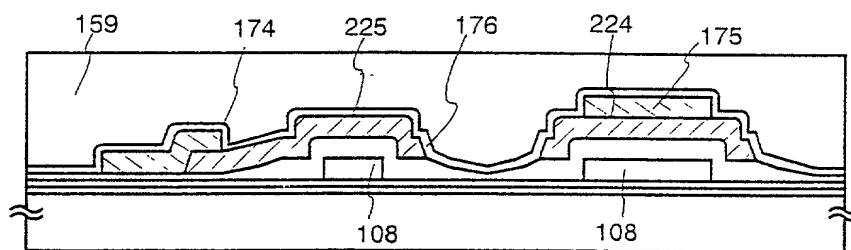


Fig. 10A

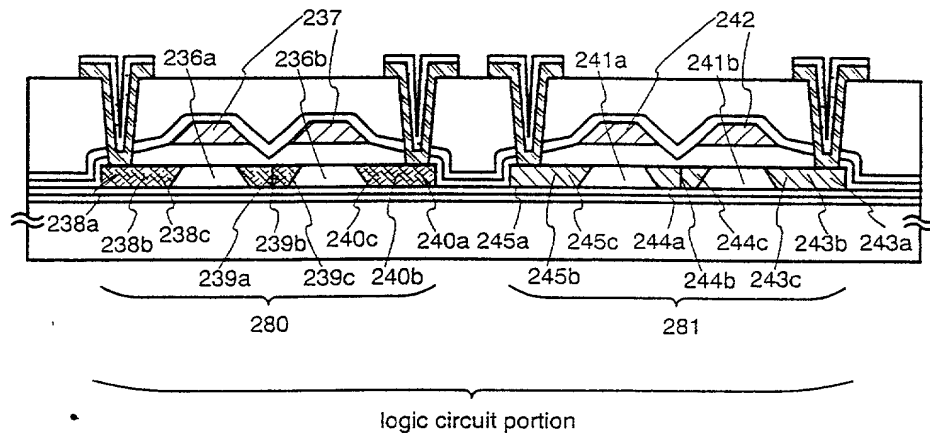


Fig. 10B

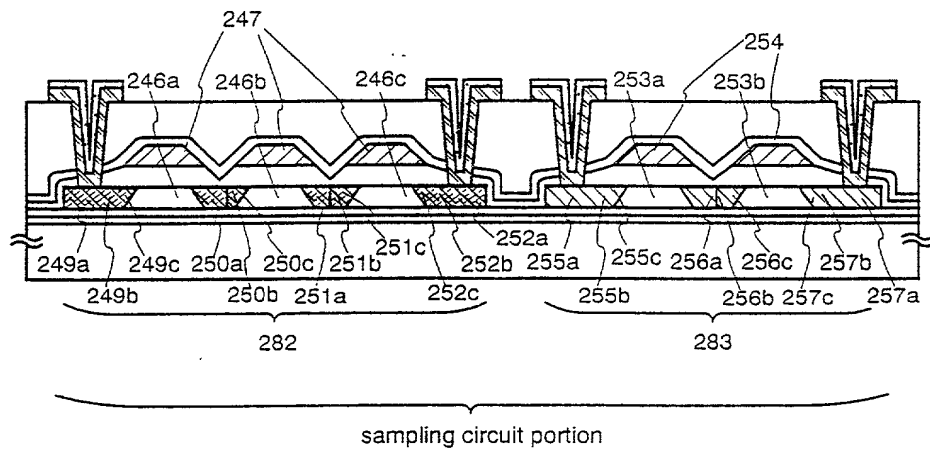


Fig. 11A

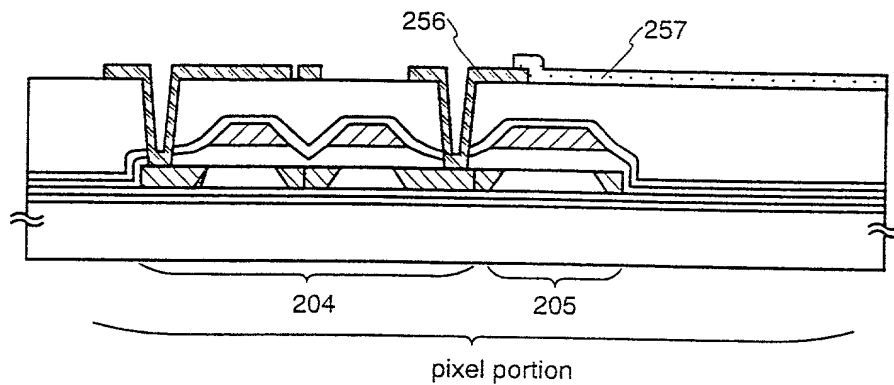


Fig. 11B

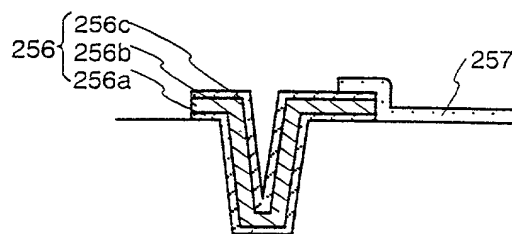


Fig. 11C

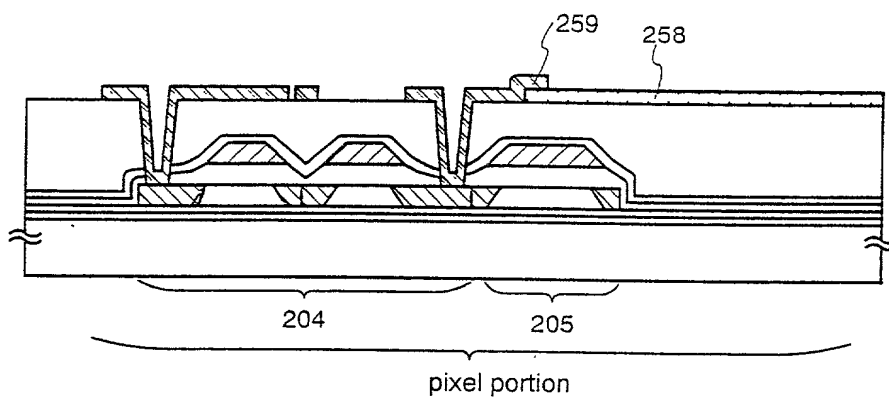
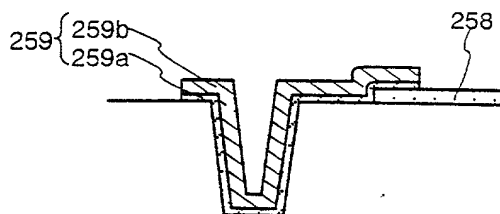


Fig. 11D



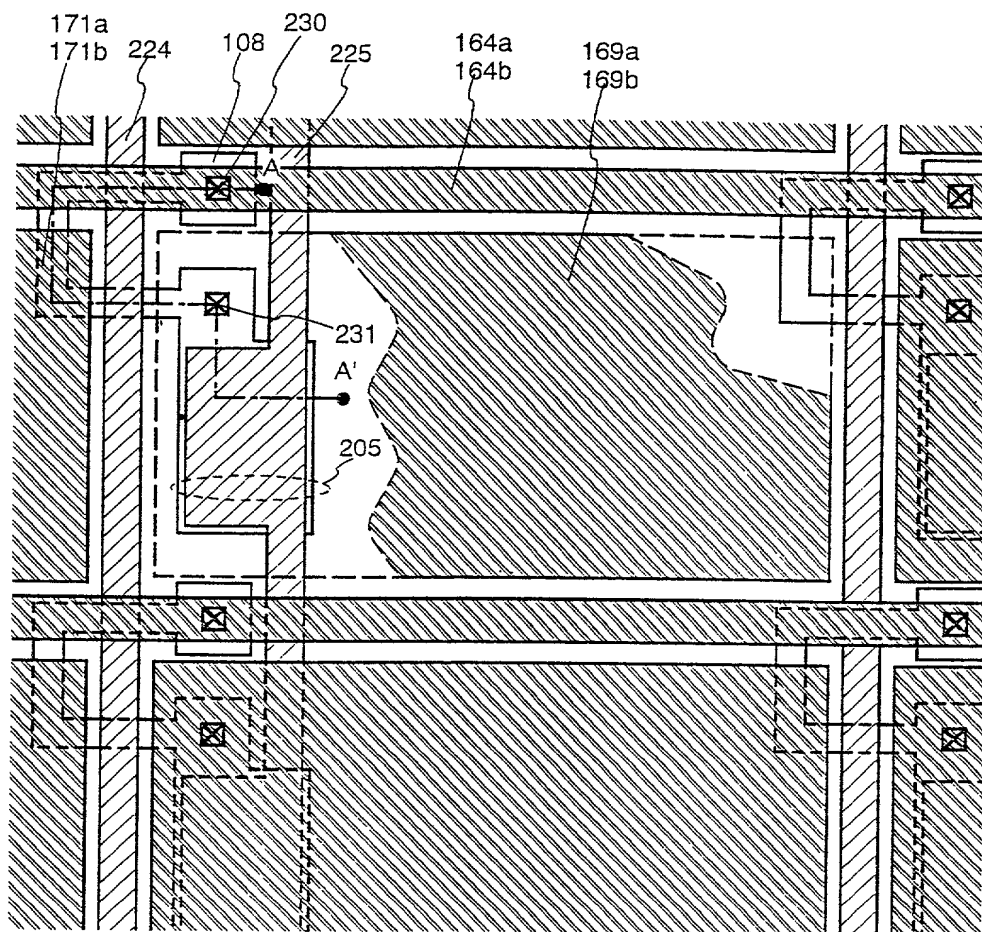
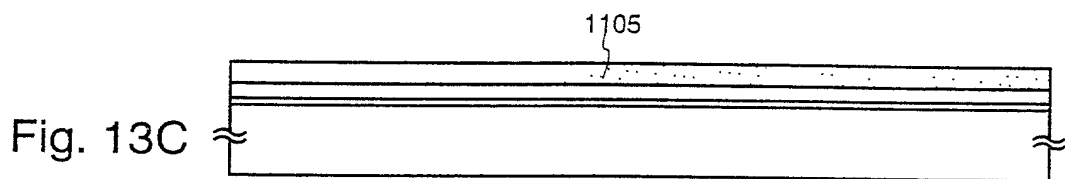
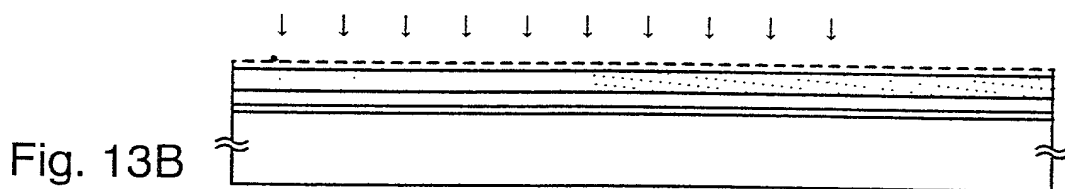
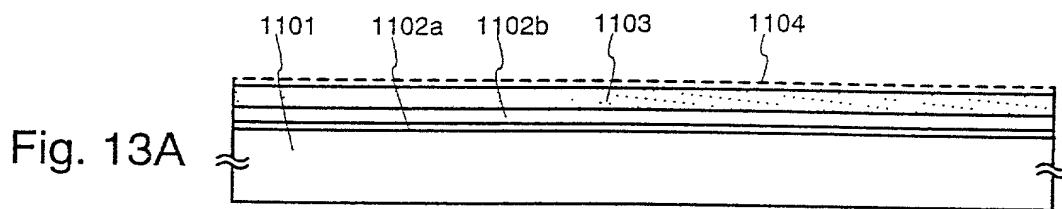


Fig. 12



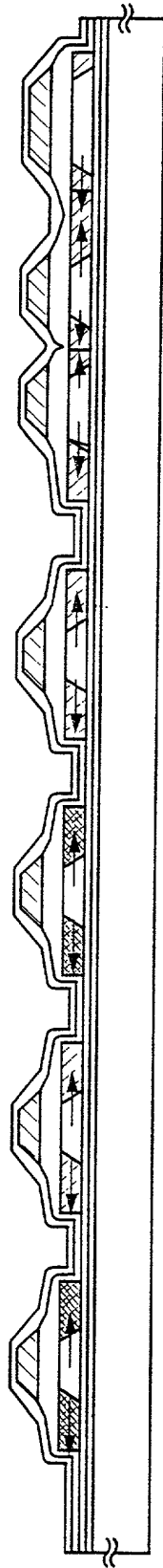


Fig. 14

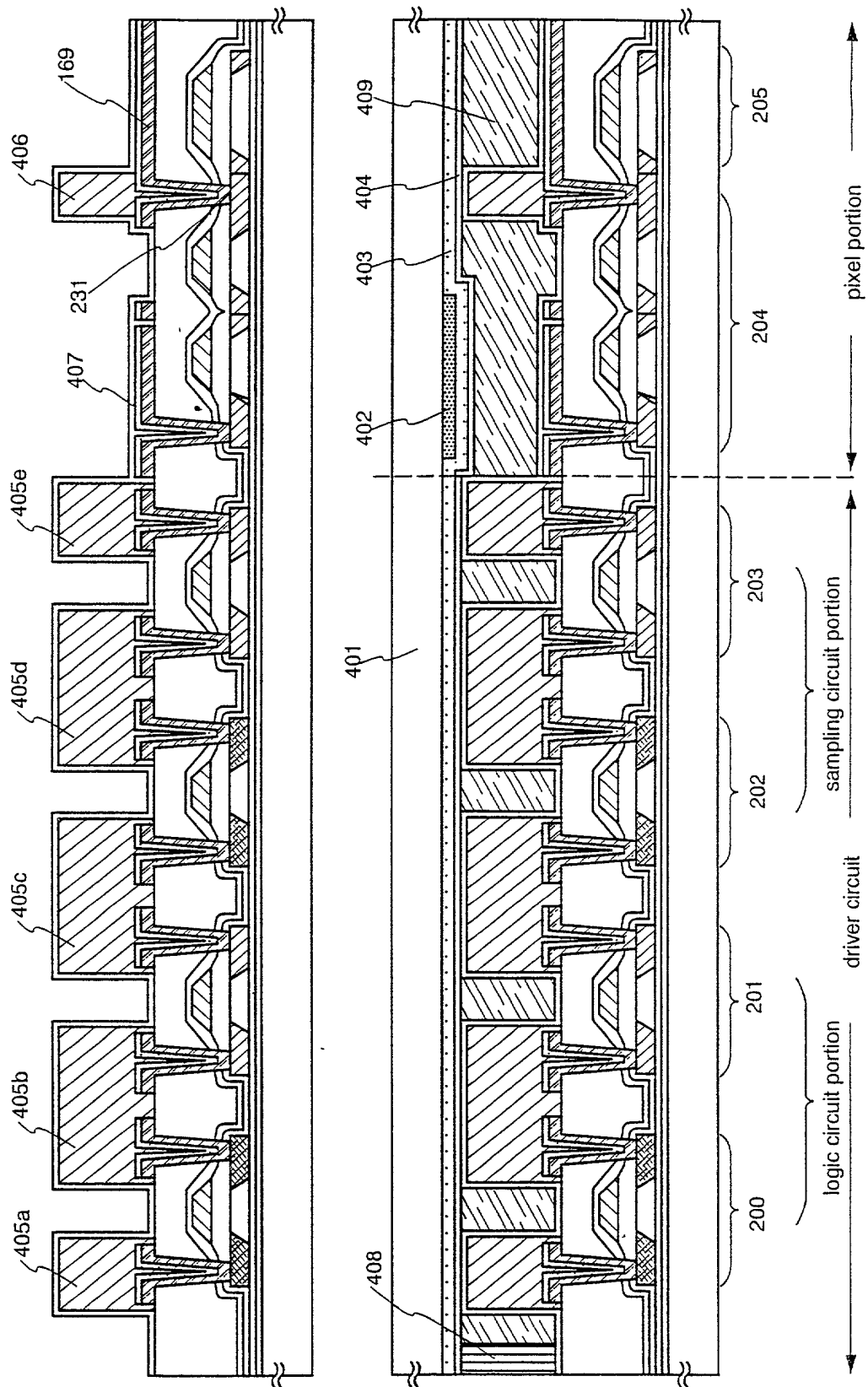


Fig. 15

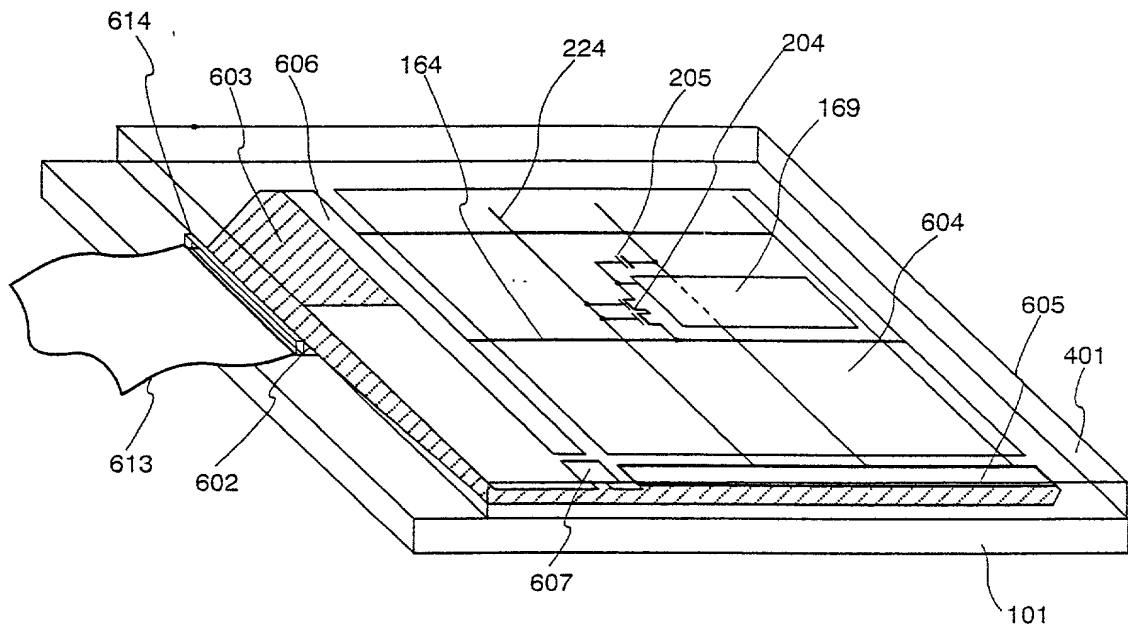


Fig. 16

Fig. 17A

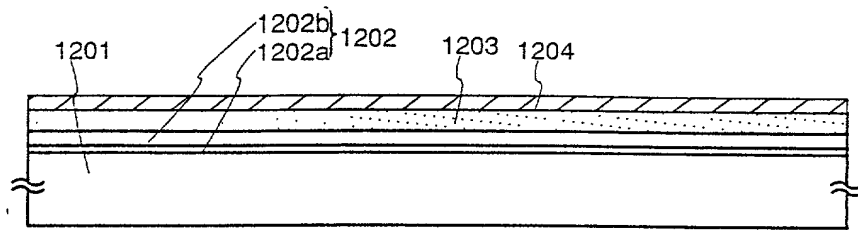


Fig. 17B

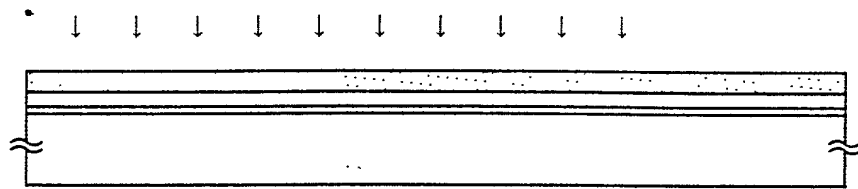
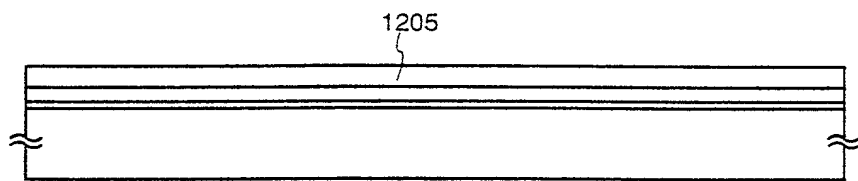


Fig. 17C



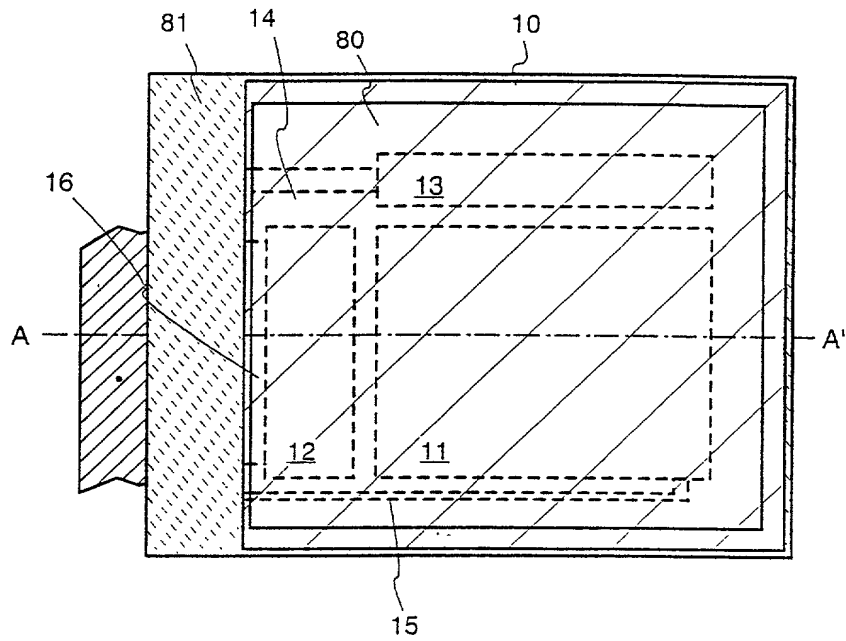


Fig. 18A

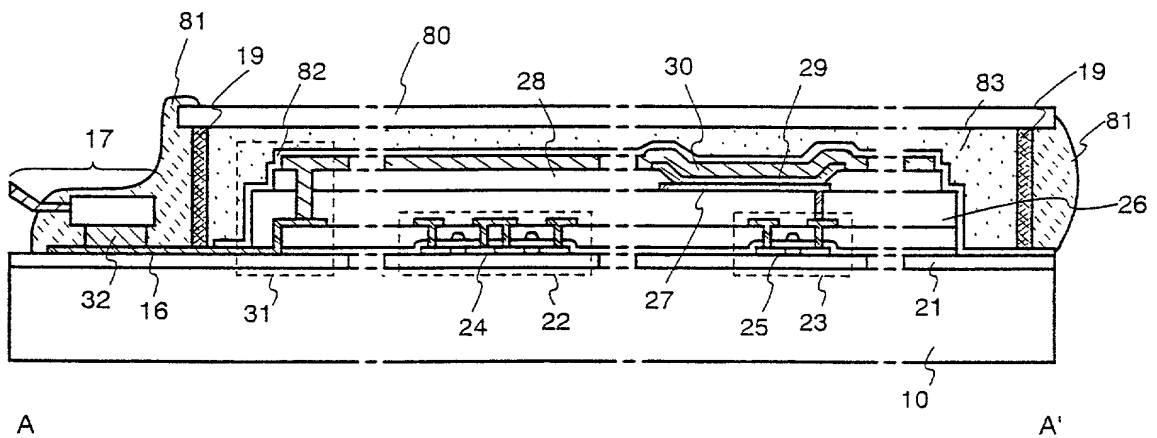


Fig. 18B

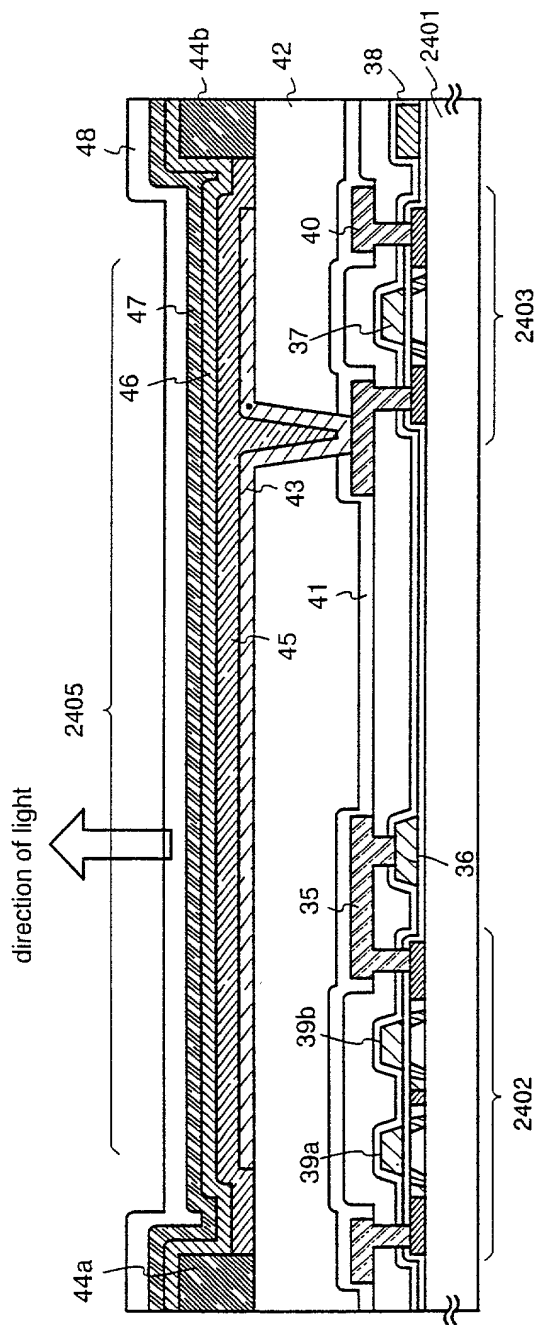


Fig. 19A

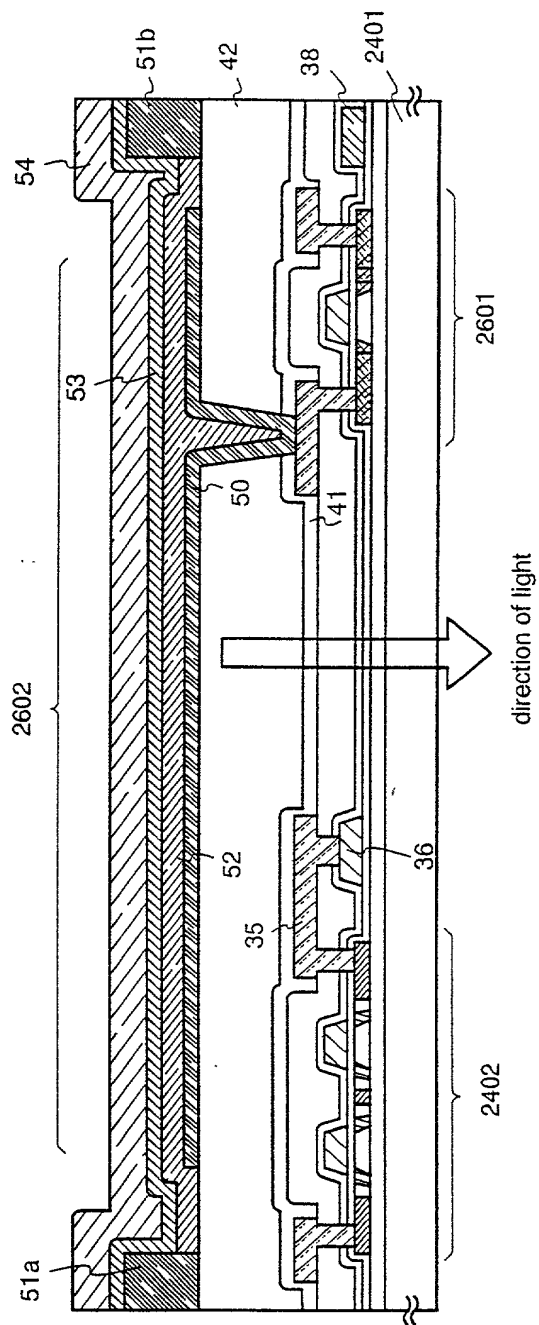


Fig. 19B

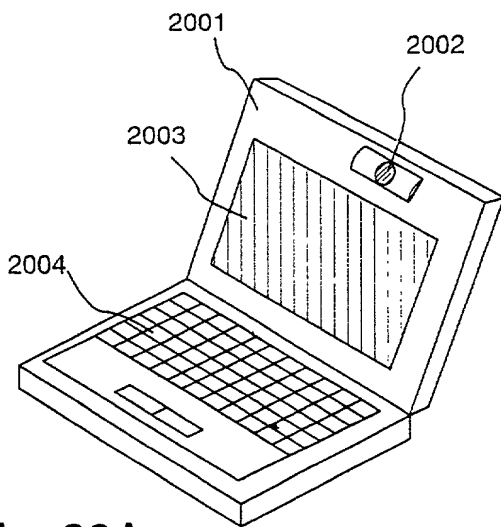


Fig. 20A

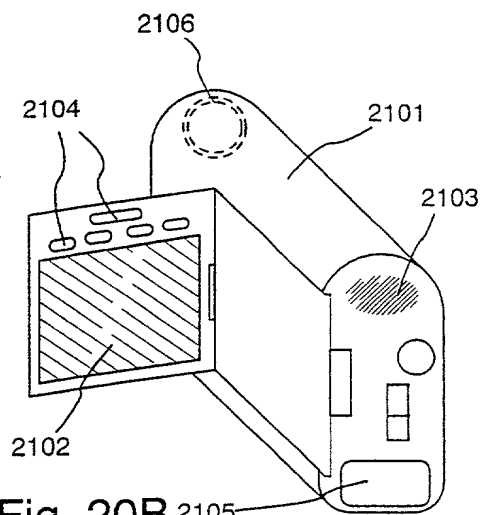


Fig. 20B

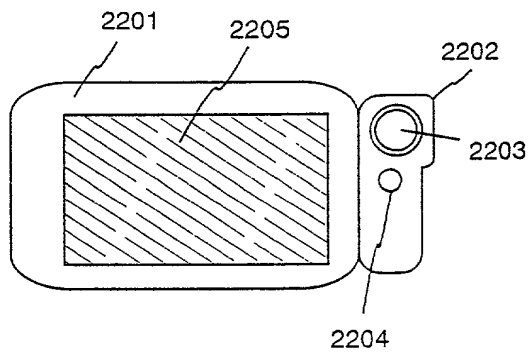


Fig. 20C

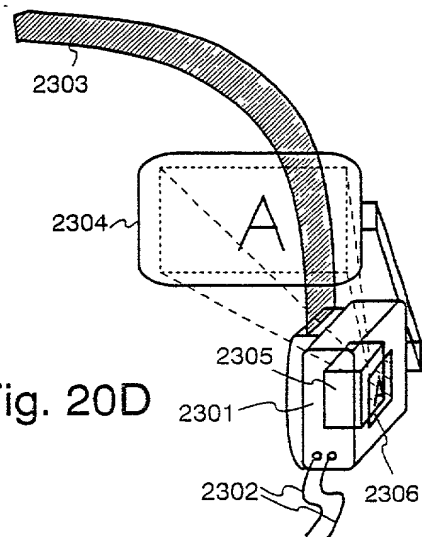


Fig. 20D

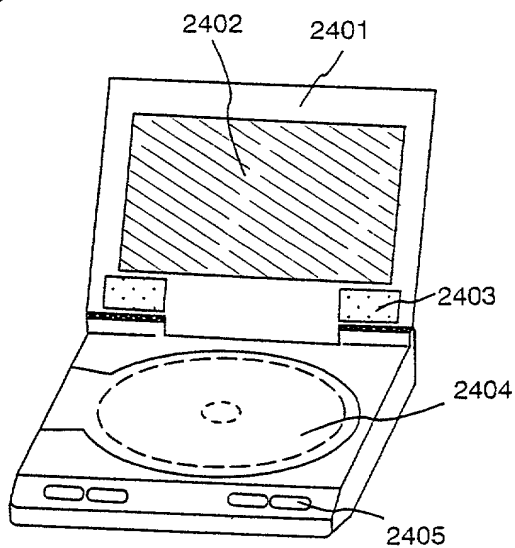


Fig. 20E

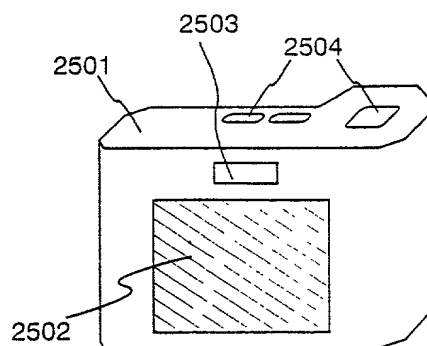


Fig. 20F

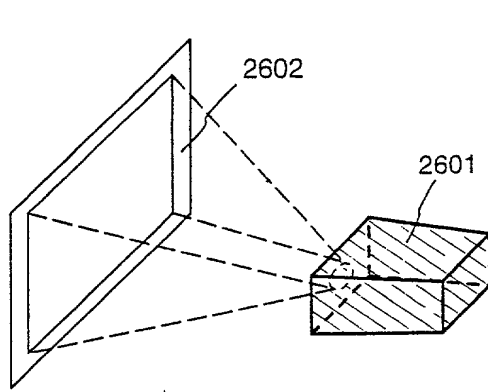


Fig. 21A

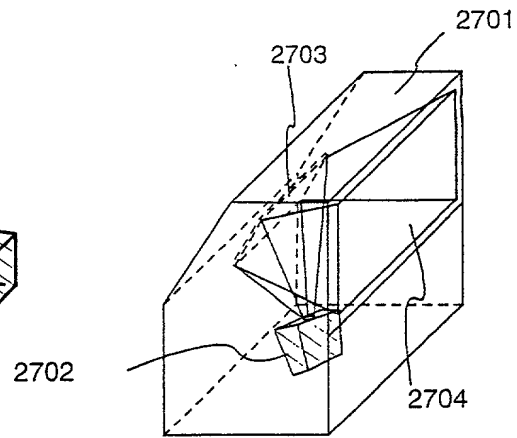


Fig. 21B

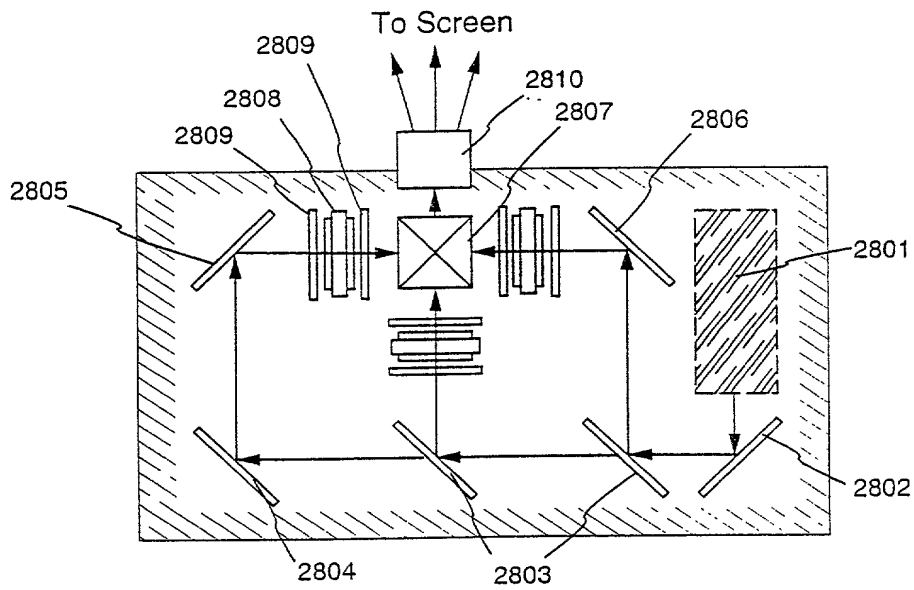


Fig. 21C

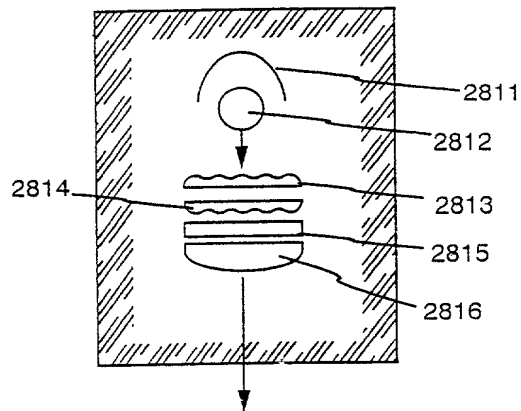


Fig. 21D

Fig. 22A

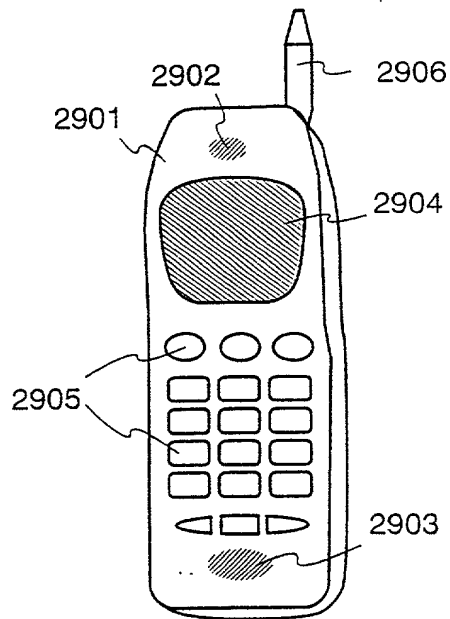


Fig. 22B

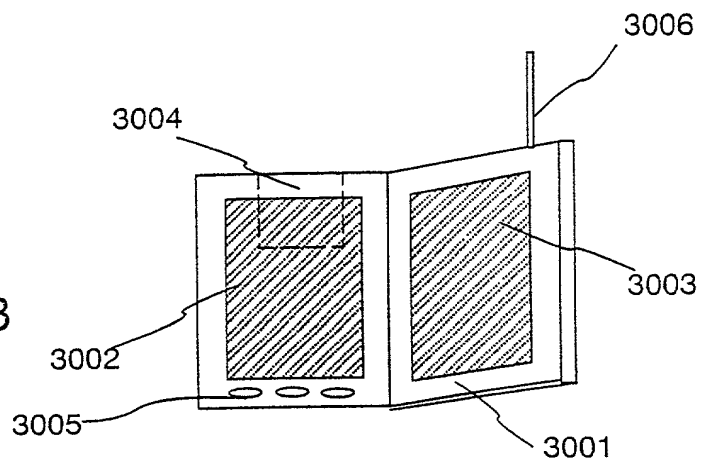
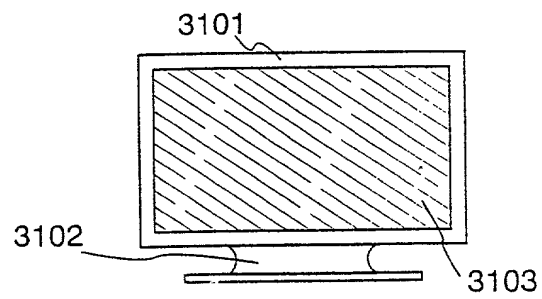


Fig. 22C



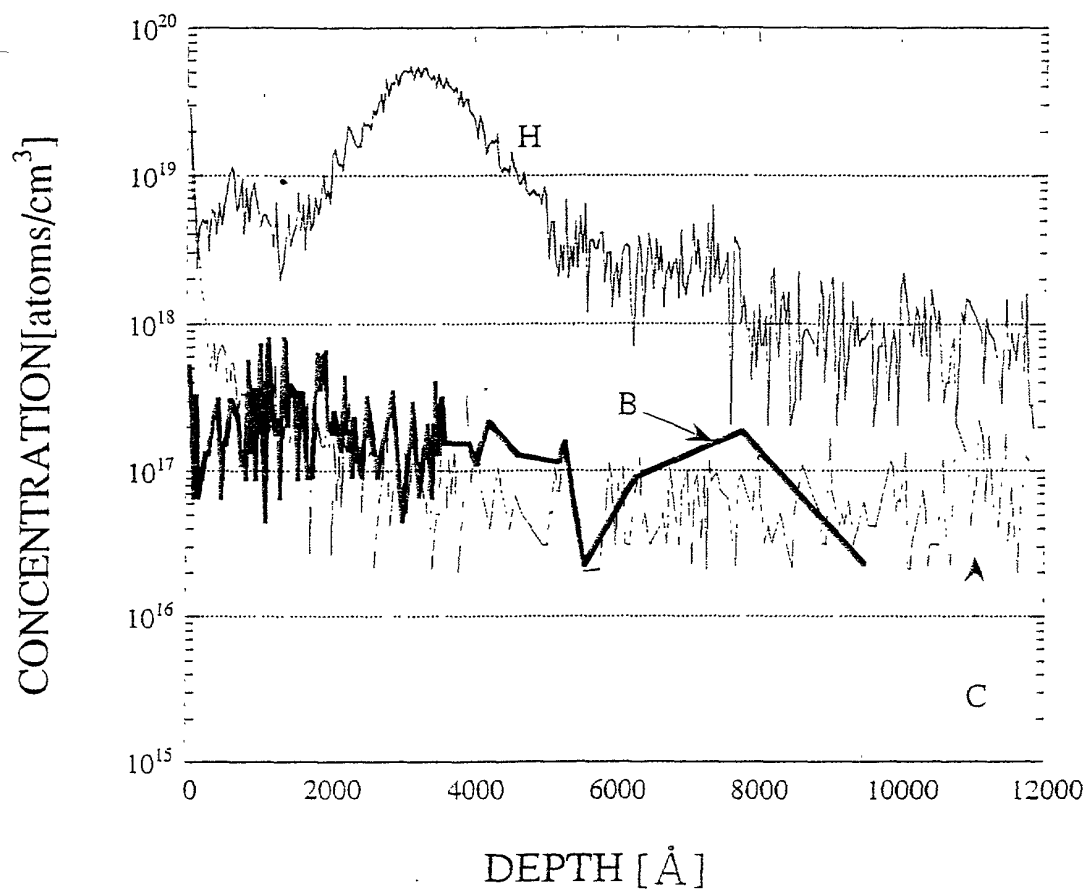


Fig. 23

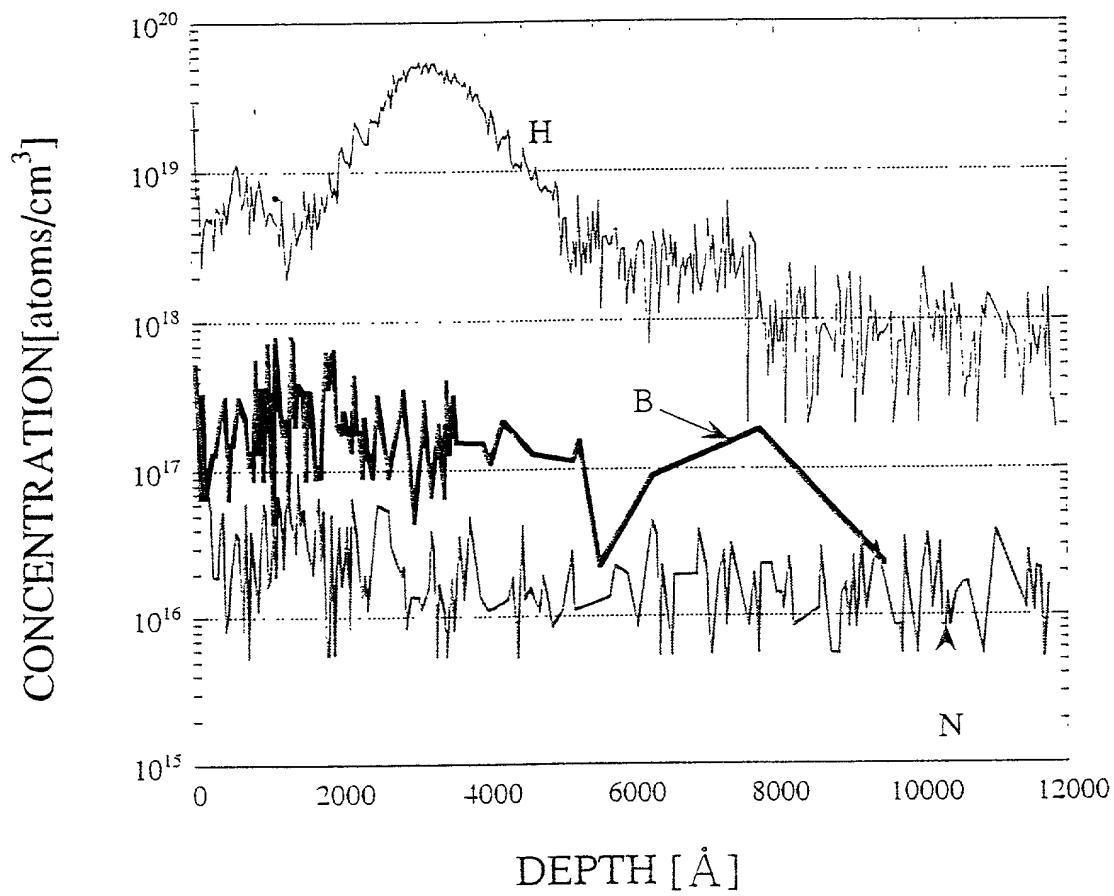


Fig. 24

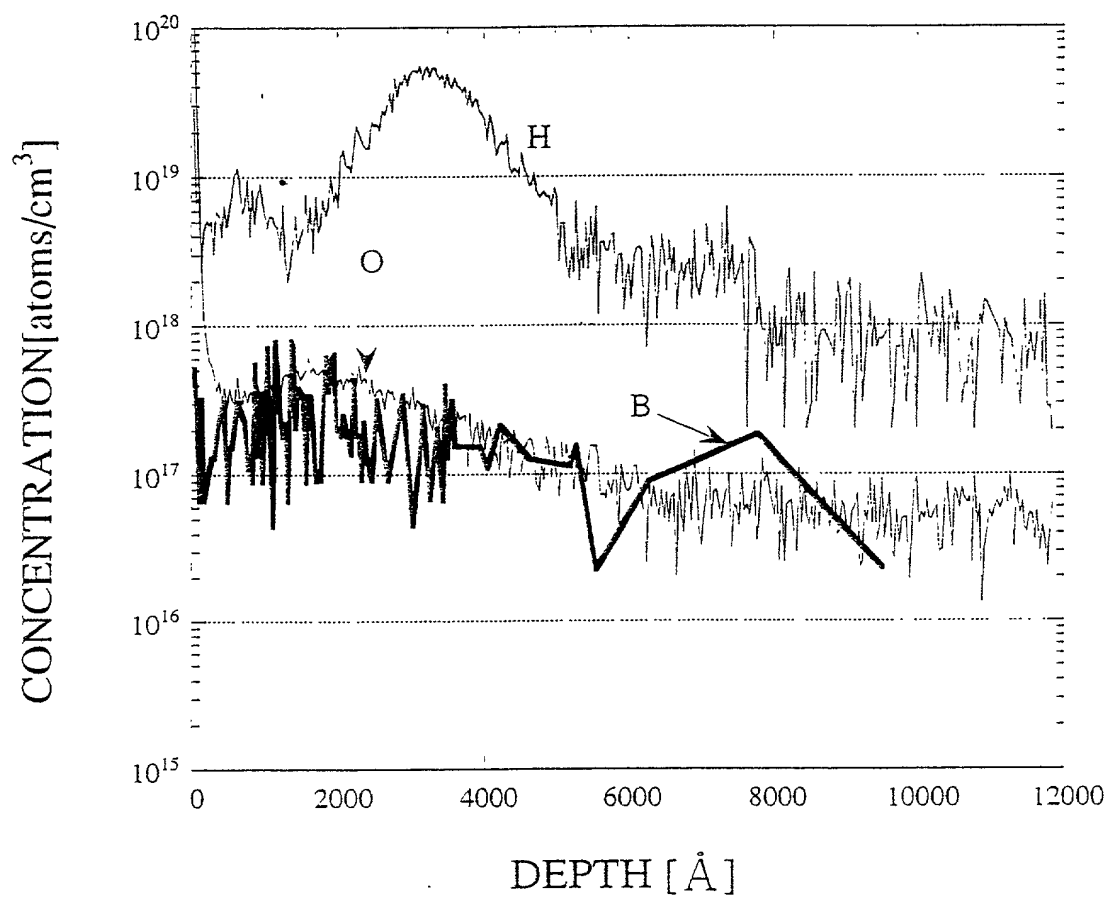


Fig. 25

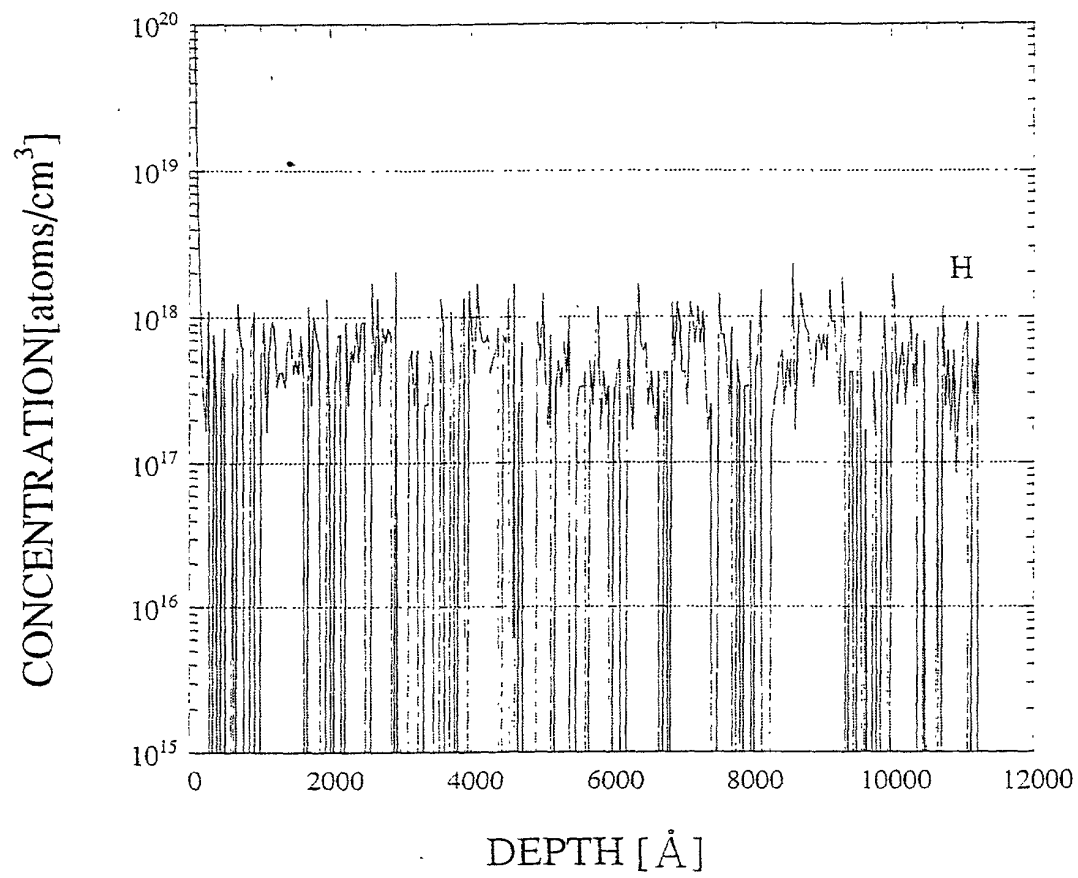


Fig. 26

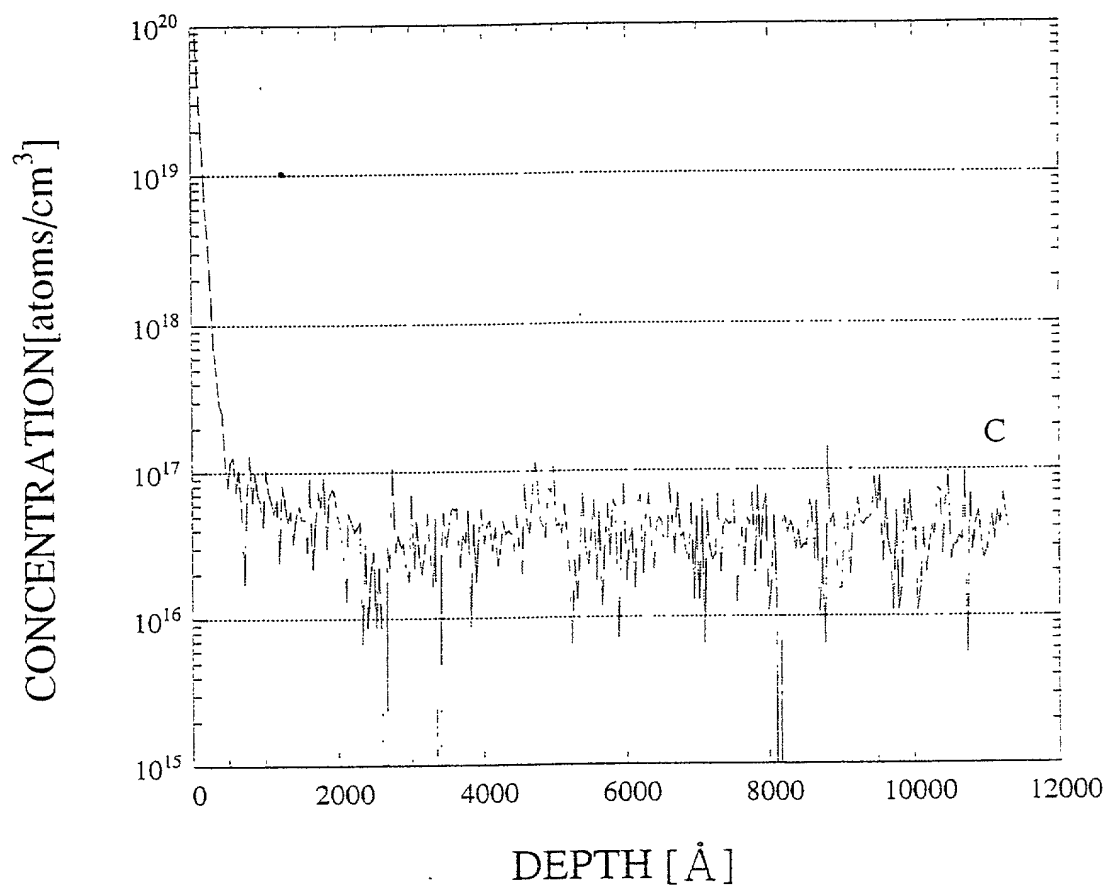


Fig. 27

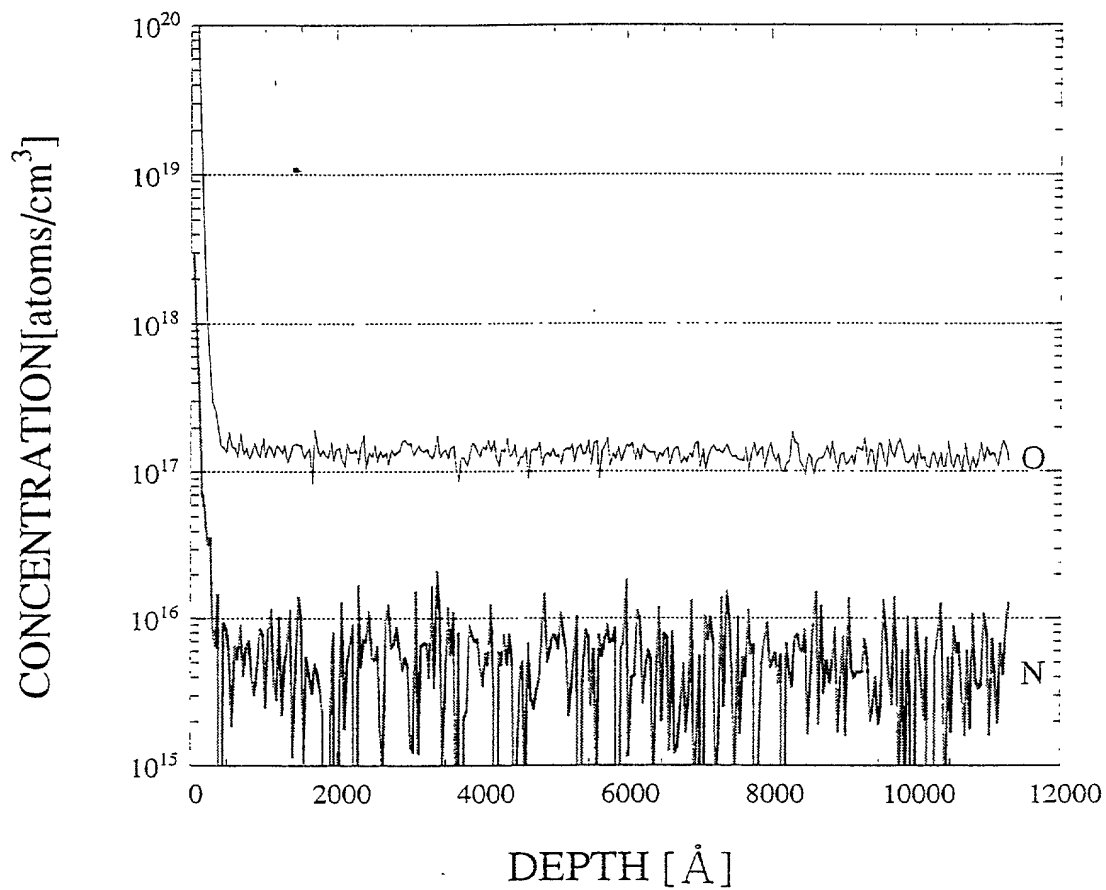
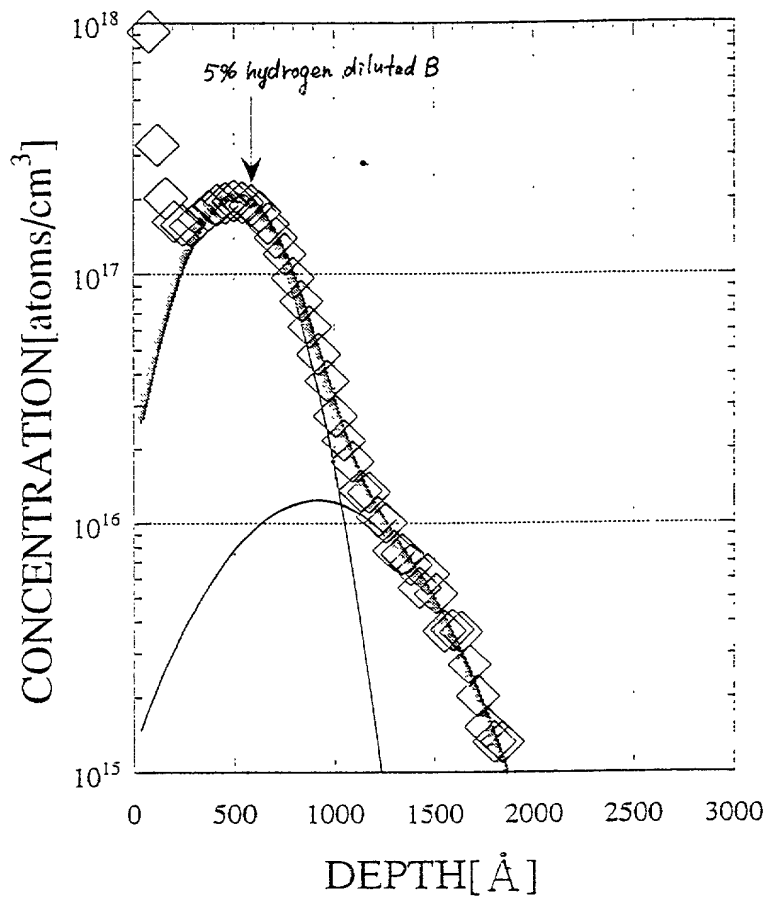


Fig. 28

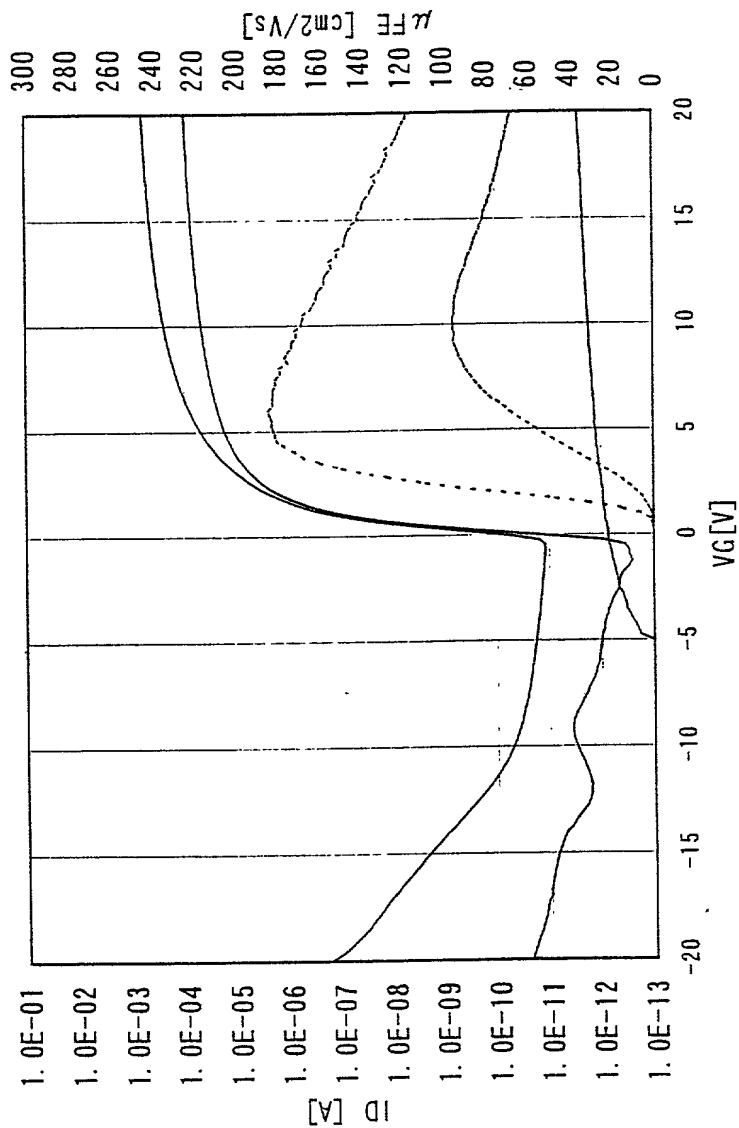


5% B fitting	
	value
dosage 1	1.1224e+12
dosage 2	1.3183e+11
standard deviation 1	227.08
standard deviation 2	422.75
projected range1	494.37
projected range2	908.19
χ^2	0.52998
R	1

Gaussian function fitting
 projected range of B at 30kV (Å)
 LSS calculation (into Si or SiO₂)
 B⁺ : ~ 1000 Å
 B₂⁺ : ~ 500 Å

Fig. 29

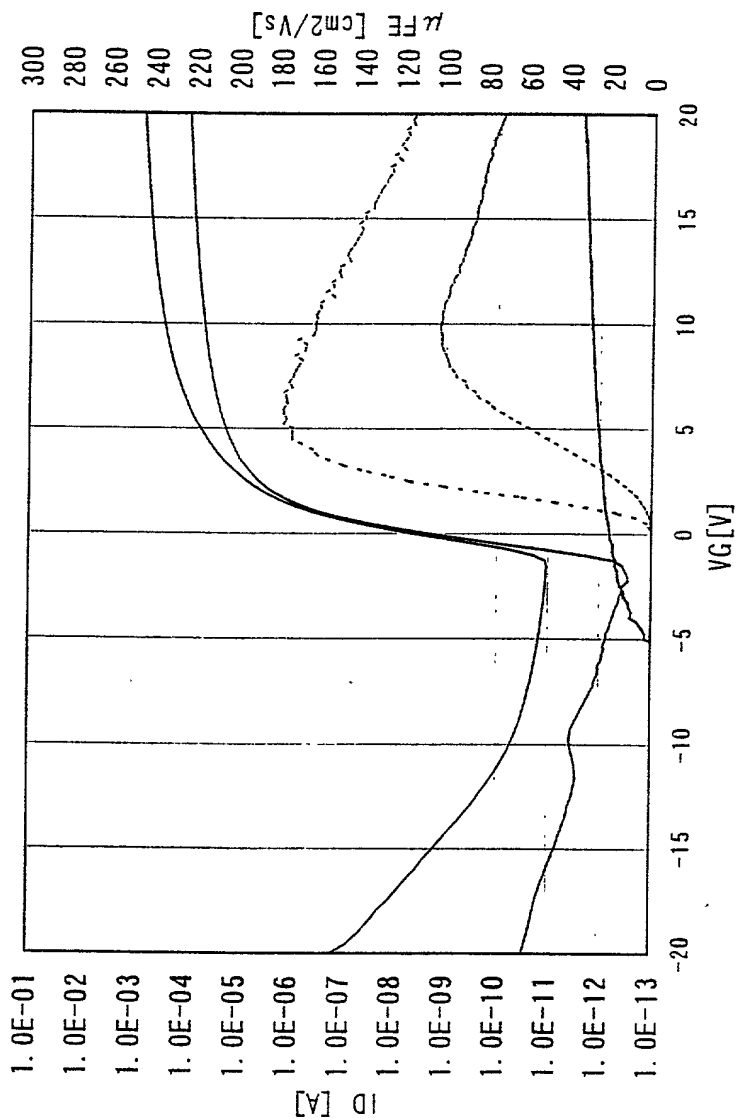
(N-ch, L/W= 7.1/ 7.5, Tox= 115)



parameter		
channel type		N
kind of TFT		A
value of L [μm]		7.1
value of W [μm]		7.5
dielectric constant		4.1
thickness of oxide film [\AA]		115
results		
Ion_2		2.44E-04
Ioff_2		1.70E-11
Shift_1[V]		-0.231
Vth		1.430
S-value		0.201
$\mu\text{FE}(\text{max})$		185.2
$[\text{cm}^2/\text{Vs}]$		

Fig. 30

(N-ch, L/W= 7.1/ 7.5, Tox= 115)



parameters		
channel type		N
kind of TFT		A
value of L [um]		7.1
value of W [um]		7.5
dielectric constant		4.1
thickness of oxide film [nm]		115
results		
Ion_2		2.65E-04
Ioff_2		1.43E-11
Shift_1[V]		-1.086
Vth		1.361
S-value		0.308
μ FE(max)		178.5

Fig. 31